Formalizing the Informal in Public Transportation: The Case of Motorcycle Taxis Transport Network Service in the Philippines

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JEL classification: 01, 02, 03, R1, D4

Keywords: Informal Public Transportation; Transport Network Vehicle Service; Technological Innovation

ABSTRACT

This article explores the case of motorcycle (MC) taxis in the Philippines from a systems lens, adopting the informal-formal dichotomy. Using a qualitative approach, the paper: (1) reviews the development of MC taxis from the livelihood, service, and institutional viewpoints; (2) investigates the role of technology and its impact on the public transportation system; and (3) explores the evolving forms of regulation, competition, ownership, and agreements. The article established the country's long history with motorcycles. This history is consistent with its role in filling the public transport gap. Ideally, a good public transportation system meets the "formal" service standards. Yet the policy response has persistently been reactive. Technology was used by transport network companies to advocate for drivers' livelihoods and legitimize their operations. Unfortunately, this is also symptomatic of the bigger issue that needs to be tackled– the need for a modern, urban public transport system that meets commuters' service quality expectations: comfortable, accessible, reliable, and environment-friendly. Technology via apps for better service can help in better mobility management but this should be consistent with the policy and service quality expectations of the commuters.

1. Introduction

Informal public transportation (IPT) in the form of motorcycle (MC) taxis like "xenoms" in Vietnam, "boda-bodas" in Africa, or "habal-habal" in the Philippines are often found in developing countries offering affordable and easier mobility options. MC taxis, in general, are getting serious attention from most cities in developing countries especially since their operations have evolved to include the use of apps via big companies utilizing the shared economy concept to legalize the system. MC taxis play a significant role, particularly in servicing areas where good conventional public transport is lacking. It has been deemed to initially operate only in areas where public transportation is inadequate or utterly absent. It is

also perceived as unsafe and illegal for urban operations. Motorcycles as a means of mobility have always been recognized but have become an issue for urban transport planners. This is because even if it is a valid mode of transportation for mobility and accessibility, it is not originally intended for public transportation. They were initially designed for personal transport, individually owned, and used for delivering goods, but now they are utilized as a service to bring people to their destinations. In most cities of developing countries, issues raised against motorcycle-based public transport are that of traffic congestion, worsening environment, and decreased safety. And the latter seems to especially remain true as noted in the study by Nguyen-Phuoc et al. (2019) where despite the regulation of online ride-hailing MC taxi services in Vietnam, the reported prevalence of crashes among riders is still relatively high.

MC taxis were previously known as mobility gap-fillers of a very informal nature. However, the presence of technology changed the system of operations and demand. Technological innovation has significant implications for the development of society in terms of public service, dynamics in the market economy, and imposed regulatory policies (Hochgerner, 2011; Cavallo et al., 2022). As society evolves, the capacity of the public to deal with changes varies. Though seemingly harmless and fundamental, the polarization of the public's capacity to exploit the advantages of innovations has adverse consequences in the long run. Accordingly, every market has a pattern of performance improvement that customers can either absorb or utilize: some customers are high-end, very demanding, and willing to buy high-performance and expensive products, whereas others are low-end and satisfied with simple and inexpensive products (Keiningham et al., 2014). This has led to a broader understanding of innovation, especially in public transportation.

Using a qualitative approach, this paper's aims are three-fold: first, it studies the history and development of Motorcycle Taxis (MC Taxis) in the Philippines from the livelihood, service, and institutional perspectives of the transport sector. Second, it explores the role technology played, using the informal-formal framework looking at public transportation components such as the mode (motorcycle or MC), infrastructure, and system of operations. Third, it investigates the evolution and challenges in terms of regulation, competition, ownership, and agreements as well as organizational form, and capacity development, among others.

The paper employs De Soto's (1989) initial definition of informality, referring to individuals or enterprises operating totally or partially outside the legal system, and relates this to the supply, and demand factor in the context of public transport services provided. Moreover, using thematic analysis, this paper identifies and discusses key issues in the growth of MC taxis utilizing the Transport Network Companies (TNC) platform. This includes the issues of safety, regulation, environmental impact, socio-economic implications, and technological advancements.

The paper follows the following format: Section 1 provides an overview and the goal and objectives of this paper. Section 2 presents the related literature. Section 3 provides the research approach, methodology, and conceptual framework, the informal-formal dichotomy in the context of public transport system components. Section 4 presents the history, description, and growth of motorcycle taxis, Transport Network Vehicle Services (TNVS), and

TNC in the Philippines. Section 5 discusses the intersections of MC taxi operations with that of TNVS and TNCs including the role of technology using the informal-formal framework and Section 6 concludes and recommends.

2. Literature Review and Research Approach: Materials and Methodology

It has been well-documented that motorcycles play a significant role in addressing mobility issues. Motorcycles as a mode of transportation have an interesting history which began in the second half of the 19th century in Europe as an inventor's dream of updating the bicycle (Connor, 1913). Several designs and machines came out, particularly in Germany and England and this soon reached the United States of America. Interestingly, experimentation and innovation were driven by motorcycle racing, a new sport that emerged during that period. By the 1960s, its role shifted to a more utilitarian one, and became an icon for individual mobility (Chadwick, 2001). And now, it has become an important transport industry, notably in Japan, the People's Republic of China, India, and Southeast Asia (Alexander, 2009).

The rapidly increasing motorcycle ownership in Asia has prompted many scholars to study this mode of transport as they both pose problems and at the same time respond to the mobility needs of the community (Bray and Holyoak, 2015). In the last decades, MC taxis as a commercial transportation mode have flourished, particularly in cities of developing countries. It has been widely used and described as a form of informal transportation and shared mobility (Herawatie et al., 2024). This section further reviews earlier studies, noting the related positive and negative issues associated with the motorcycle as a mode of public transportation, with a particular focus on the case of the Philippines.

2.1 Literature Review: Motorcycle Growth and the App-Based MC Taxis in Southeast Asia

Motorization in Southeast Asia has always been associated with the growth of motorcycles. Figure 1 shows the number of registered motorcycles against the number of passenger cars in the Association of Southeast Asian Nations (ASEAN) region. Both have been gradually increasing since 2014, however, for every country represented, the registered number of motorcycles is much higher than that of registered cars.

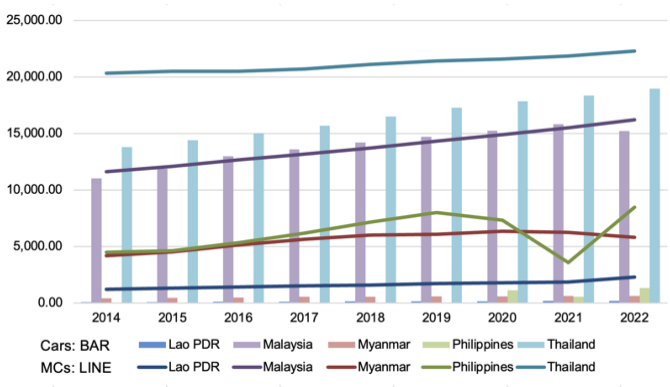

Figure 1. Total Number of Registered Motorcycles (Line) vs. Passenger Cars (Bar) in the ASEAN Region in Thousands 2014-2022 (ASEANstats, 2022)

In Indonesia, Thailand, and Vietnam, motorcycles especially MC taxis are an integral part of urban life. They are considered a transportation lifeline in the urban areas of these countries as they weave through congested traffic (Jha, 2019). There are no standard fleet characteristics across countries, even using the rural or urban classification. The MC taxi mode as a public transport service has been repeatedly initially characterized as an informal public transportation system. Its increasing use is a response to fill the gap in transportation mobility needs of large urban areas. In Jakarta, MC taxi ride-sourcing was found to complement existing transportation networks by acting as feeders to transit stops (Irawan et al., 2019). It has been described as a fast and efficient means to navigate areas with heavy traffic (Napalang et al., 2023). Moreover, this mode provides additional livelihood and income opportunities for the drivers (Tuan and Mateo-Babiano, 2013).

The early second decade of the 2000s is characterized by the presence of app-based mobility services. An ITF 2023 study notes that, at present, there are super apps (i.e. Grab and GoJek) that give app-based mobility services using MC taxis in the ASEAN region. Some legally operate while others are not yet legally recognized. This is where ride-sourcing, a digital platform supplied by private vehicle owners to offer on-demand door-to-door transport services to users requesting rides, comes into play. Ride-sourcing services via apps are classified as private vehicles called ride-hailing and shared vehicles named ridesharing. MC taxi falls under the former classification since the app provides access to only an individual, and no other unknown co-passengers can join that particular ride in between (Kumar, et al., 2022). Table 1 below summarizes the legality and ownership of the existing app-based MC taxi ride-hailing.

Table 1. Legality and Ownership of App-Based Motorcycle Taxi Ride-Hailing (ITF, 2023)

Country	App-Based Motorcycle Taxi Ride-Hailing	
	Legality	MC Taxi Ownership
Brunei Darussalam	Not available	Not available
Cambodia	Not available	Not available
Indonesia	Operating legally	Private
Laos PDR	Operating, but not legally recognized by the regulatory framework	Private
Malaysia	Not available	Not available
Myanmar	Operating, but not legally recognized by the regulatory framework	Private
Philippines	Operating legally	Private
Singapore	Not available	Not available
Thailand	Operating, but not legally recognized by the regulatory framework	Private
Vietnam	Operating legally	Private and Public

Table 1 shows the variation in terms of recognition of app-based Motorcycle Taxi Ride-Hailing services by the regulatory framework in the respective countries. MC taxi operation under ride-hailing operation is legally accepted only in Indonesia, the Philippines, and Vietnam. For most of the countries, the ownership is private (except Vietnam where it is also public). The app platforms typically focus on providing efficient and transparent services and do not necessarily consider legality. In the Philippines, the app-based MC taxis have been provisionally legalized, with the Philippine government permitting them to run on a pilot phase while they study their longer-term impacts. Philippine policymakers observed the many positive sides of app-based mobility and during the COVID-19 pandemic, noted that they became safer than public transport. This is also the argument being used by app-based mobility companies on the need to legalize MC taxis as a public transport mode (Rey, 2018).

2.2 Issues on Informality, App-based Mobility, and Public Transport

Given the worsening traffic conditions and poor public transportation conditions in many urban areas, the emergence of MC taxis as a mode of public transportation has provided commuters with an additional choice (Cano, 2018). By 2017, enterprising app-based companies had recognized them as a public transport option and had created applications catering to motorcycle drivers who would like to provide transportation services. This emerging trend in the informal public transport literature noted these applications as part of the disruptive technologies with Behrens et al. (2021) arguing that these digital platforms may have a significant impact on operating practices. However, few cities in the Global South have regulatory frameworks in anticipation of this change in operating practices.

In the Philippines, road-based public transport services have always been privatized. This has produced an open-for-all market condition (Cervero, 2000) that raises strong competition between (and among) modes and operators in many urban areas. This is strongly felt in the congested and inadequate road network of Metro Manila. Drivers and operators aim to maximize profits by gathering as many passengers as they can and by outpacing their competitors along revenue routes (Mijares et al., 2014). This competitive behavior is often alleged to compromise passenger safety with the Metropolitan Manila Development Authority reporting a total of 36,486 motorcycle incidents in Metro Manila for the year 2023 (MMDA, 2024). It is also important to consider that traffic congestion, and inadequate or absent public transportation, especially in Metro Manila, prompt commuters to pick mode options that allow door-to-door transport services (Cano, 2018). This kind of service is best provided by MC taxi providers as seen in Figure 2, waiting in front of the residential condominium for the early morning commuter. MC taxis in the Philippines can be classified into two types: conventional and non-conventional. Conventional MC taxis (often called “habal-habal”) are usually operated by the motorcycle owners themselves (Regidor et al., 2017). They may or may not use a self-designated terminal. On the other hand, non-conventional motorcycle taxis are mobile application-based and act as another form of Transport Network Vehicle Service (TNVS) (LTO, 2024). The legality of MC taxi operations has always been in question and has undergone suspension and service resumptions since their emergence in Metro Manila (Talabong, 2017; Rey, 2018). They are now recognized as Transport Network Companies (or TNCs), an organization that provides pre-arranged transportation services for a fee using a digital platform technology that connects passengers with drivers using their units (LTO, 2024). This is also

known as ride-sourcing or utilizing technology to provide on-demand transport services with the expectation of higher reliability and less waiting time (Rayle et al., 2014).

Figure 2. MC Taxis (identified by the helmet and uniform shirt of ride-hailing TNC it represents) waiting in front of an apartment building (Source: Guillen, MDVG., 2024)

The concept of informality is said to be closely connected to existing practices of road-based public transport. It is also connected to different kinds of arrangements, networks, activities, and providers, and the complication of the term increases (d'Alencon, et al., 2018). Scholars noted it as an indigenous mode of transport citing the innovative design and role it played in the community (Guillen and Ishida, 2013). They are either gap-fillers or last-mile connectivity modes in the absence of a formal mode of transportation. Most cities of developed countries are recognized by their formal public transportation system with fixed routes, scheduled services, and operations by formally regulated and managed organizations (either private companies or the public sector) (Mokoma and Venter, 2023). On the other hand, in the Global South, public transport modes are often characterized as paratransit or small to medium-sized buses with flexible schedules and routes, often provided by operators weakly governed by regulators (Behrens et al., 2016). If there is a global standard in terms of vehicle design in road-based public transportation mode, most cities in the Global South might fail. It is important to note that in the former, public transportation has traditionally been provided by highly subsidized public sector bodies often operating in siloes. From the management perspective, this made sense as it provides trip options with ticketing and customer service but was not always in line to expedite travel across the transit system. Moreover, agencies typically have a monopoly to protect revenue and market share (KPMG Perspectives, 2023). The present condition of most cities of developing countries poses some issues in overcoming the governance barriers providing an equitable and efficient mobility system.

Previous studies noted that both concepts of shared mobility and informal transport increase socio-economic activity by the services and provide employment opportunities to many low-skilled persons (Cervero, 2000; Mouratidis, 2022). It highlights that the lack of formal public transit as well as responding to the mobility needs of those without vehicles as the main causes of the MC taxi growth. The services also grew as multi-service apps included the delivery of goods and food (Herawatie et al., 2024). The need to create a level playing field and avoid seeking to protect the interests of taxi companies, informal transport operators, public transport services, or other incumbent markets has always been the call. These app-based transport services give regulators a distinctive challenge as the wide range of app-based services usually falls under the horizon of more than one government office (ITF, 2023).

3. Conceptual Framework, Research Approach, and Methodology

This section provides the conceptual framework, research approach, and methodology for understanding the “formalizing” the informal transportation mode like the MC taxis’ case in the Philippines.

3.1 Conceptual Framework: The Formal-Informal Dichotomy in the Context of the Transportation System Components

This paper uses the informal-formal dichotomy in the context of transportation system components: mode, infrastructure, and system of operation (Dileep and Pagliara, 2023). The dichotomy has extensively been adopted in earlier studies on the informal economy (Meagher, 2013; Del’Anno, 2021; Smart, 2024), which is often categorized into three major issues: the definition, which questions if its legality is accepted or is based on meeting certain standards; the measurement, which is often characterized by estimating its size, and usually also associated with employment; and the theoretical explanation of “informality”. Informality, in this case in the transport sector, would mean marginal barriers to entry act as the access to employment and livelihood opportunities for the urban area’s workforce (Mateo-Babiano, et al., 2020). Revisiting De Soto’s (1989) argument, he used informal transportation as an illustration of the informal sector’s creativity (some called them innovation) and entrepreneurship. Using this example, he noted that “the dynamics operating in the informal economy should be allowed to clear the way for capitalism and free market activity, thereby creating a path of "market-oriented reforms” (p. 57). In this case, the legality or the role of law is both formal and informal as the law or policy has a direct effect on the efficiency of the economic activities it regulates. Moreover, in his book The Other Path, De Soto further rationalizes that a policy is in the positive if it ensures and advances economic efficiency and in the negative if it delays it and that these avoidable costs of formality originally come from a negative policy (1989). The informal-formal dichotomy is used to determine where “informality’ lies in the three components mentioned above.

This informal-formal dichotomy also draws some examples from the case of MC Taxis in Bangkok, Thailand, and Jakarta, Indonesia. In Bangkok, MC taxis are described to be “operating, but not legally recognized by the regulatory framework” (ITF, 2023), while the drivers are considered independent contractors (Theerakosonphong and Amornsiriphong, 2022). Minimal government intervention takes place allowing the private stakeholders to exploit one another within the system (Sopranzetti, 2022). In Jakarta’s case, MC taxis are operating legally through the privatization of its services. They are not considered as a public transportation mode (Dina, 2017), instead app-based ride-hailing companies or driver-organized coalitions comprise the system existing today (Dina, 2017).

The MC taxi system of the Philippines is assessed using the informal-formal dichotomy looking at the transportation system components borrowing the definition used in the tourism sector (Dileep and Pagliara, 2023): the mode, in this case, the MC taxi system, the system of operations which includes the policies, ownership and management and, the infrastructure. Based on the example of Bangkok and Jakarta, this study applied the following framework

below. As the dichotomy moves from informal to formal, the changes in certain transportation system components are noted in Figure 3.

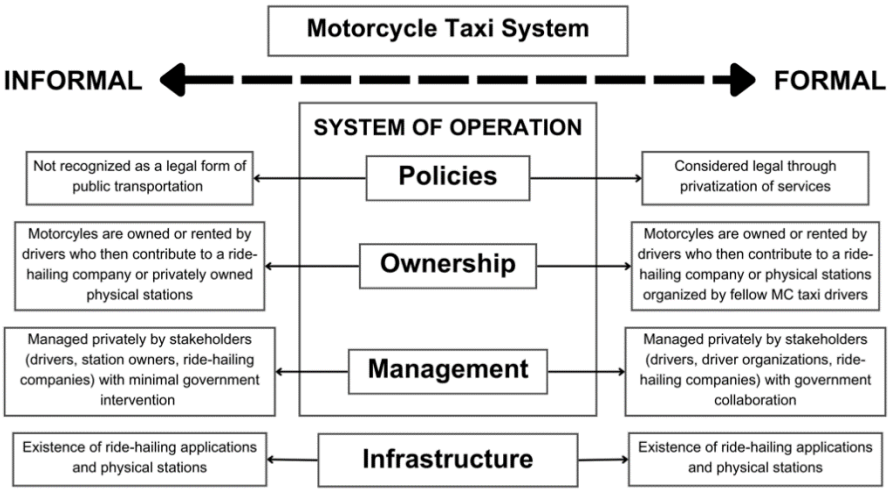

Figure 3. Conceptual Framework: MC Taxi System in the Informal-Formal Dichotomy using the Transportation System Components (Dileep and Pagliara, 2023; Dina, 2017; Oshima et al., 2007; Sopranzetti, 2022; Theerakosonphong and Amornsiriphong, 2022)

3.2 Research Approach and Methodology

The study traces the history and development of MC taxis and explores initial key research issues from the literature review using the informal-formal conceptual framework of analyzing the MC Taxi from the perspective of the transportation system's components; the mode, noting the questions, what makes it informal, the infrastructure-what makes it formal, and, the system of operations noting how technology makes the system a bit "formal". The paper surveys the literature on MC taxis with a particular focus on the TNVS and TNCs using the case of the Philippines, especially Metro Manila.

4. Motorcycle Taxis (MC Taxis), Transport Network Vehicle Services (TNVS) and Transport Network Companies (TNC) in the Philippines

This section provides an overview of the history of MC taxis, its current state, and the role of TNVS and TNCs in the case of the Philippines.

4.1 The State of Motorcycles and the Emergence of MC Taxis in Metro Manila

In rural areas of the Philippines, where public transportation services are sparse, motorcycle taxis or motorcycles for hire have long been operating to transport both passengers and goods (Regidor et al., 2017). In a 2022 interview, Gogor, a "habal-habal" or MC taxi driver, stated that he has been in the profession since 1988 (d'Orléans and Waddington, 2022). Guillen and Ishida (2004) confirm that it was in the 1990s that motorcycle taxis emerged as part of the Philippine transportation landscape. MC taxis made their way into urban areas like Metro Manila in the late 2000s to serve areas not covered by public transportation and to beat traffic

congestion (Regidor et al., 2017). Figure 4 shows how the motorcycle has dominated Philippine roads over the years.

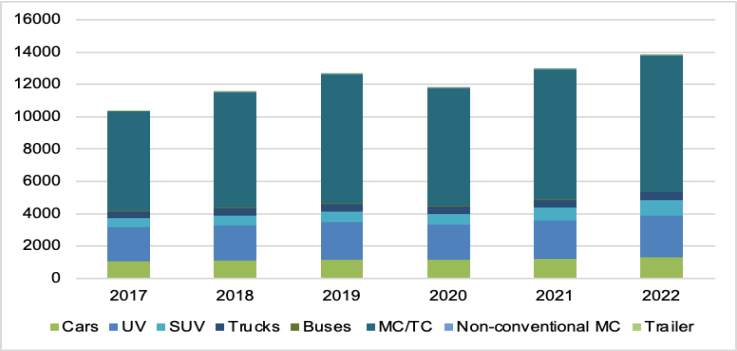

Figure 4. Number of Registered Vehicles by Type from 2017 to 2022 in Thousands (Land Transportation Office, 2017 to 2022)

Despite their long-time role as a transportation service, the law, since 1964, states that "motorcycles shall not be used to solicit, accept, or be used to transport passengers or freight for pay" (Republic Act 4136). Lawmakers in those times did not consider motorcycles to be a safe form of travel for passengers and goods (Piramide, 2009). However, the existence of motorcycles-for-hire (before 2019) was tolerated by the government because of the lack of alternative transport services, especially in rural areas (Regidor et al., 2017). As early as 2009, concerns were growing around the proliferation of the MC taxi due to the lack of regulation and insurance, inflated fares, and safety matters (Piramide, 2009). In 2014, LTFRB issued Administration Order 1 which states that vehicles without proper authorization may face fines and impound penalties if apprehended. By this administrative policy, motorcycles operating as public utility vehicles are deemed by the Department of Transportation (DOTr) as "colorum" or operating without proper authorization from the Land Transportation Franchising and Regulatory Board (LTFRB) (VERA Files, 2020).

Focusing on the safety concerns around motorcycles, road incident statistics in Metro Manila show that the daily average number of people involved in motorcycle-related incidents has risen to 58 per day in 2023 from 48.7 in the previous year (Statista, 2024). The Metropolitan Manila Development Authority reported a total of 89,950 road incidents in Metro Manila for the year 2023. Figure 5 shows the concerning number of fatal road incidents in Metro Manila where motorcycles are involved. WHO affirms this trend in their Global Status Report on Road Safety in 2023 where Southeast Asia had the highest number of road traffic fatalities in 2021. For women motorcycle taxi users in Metro Manila, their main safety concern is the possibility of involvement in a road crash (Napalang et al., 2023), and the data shows that this concern is valid. According to a survey conducted by Mangco, et al. at informal MC taxi terminals in Metro Manila, the top reason why non-users opt not to travel on motorcycle taxis is because of safety concerns (2024).

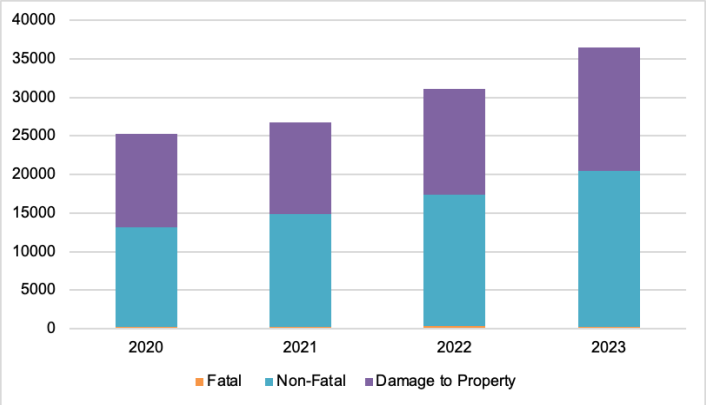

Figure 5. Motorcycles Involved in Road Accidents 2020-2024 in Metro Manila (MMDA's Metro Manila Accident Reporting and Analysis System,2024)

On the other hand, motorcycle taxi users have come to rely on this mode of transport. The main reason surveyed commuters choose an MC taxi over conventional modes (jeepneys, buses, and tricycles) is because of the time travel savings (Cano, 2018). The survey conducted by Napalang et al. (2023) echoes these results. Their respondents find the MC taxi fast and efficient. Many MC taxi users in the work of Cano (2018) and Napalang et al. (2023) ride for work purposes.

4.2 Transport Network Vehicle Service (TNVS) and Transport Network Companies (TNCs) and the MCTs

MC taxi operations in the Philippines have significantly evolved with technology. TNVS refers to the innovative ride-hailing system offered by TNCs. In Metro Manila, TNVS examples include Grab for taxi and car services. Meanwhile, Angkas, Joyride, and Move It (also under Grab) offer MC rides. TNCs and TNVs are closely related terms used in the context of the evolving transportation industry. TNC is the broader term encompassing the digital platform or company while TNVS is the specific service within the platform involving drivers and vehicles. TNVS drivers are individuals who register with a TNC, the latter provides the infrastructure like mobile applications to use personal vehicles to offer transportation services and mobility options to the general commuter public (LTO, 2024).

The first application-based ride-hailing service for motorcycle taxis, Angkas, was launched in December 2016 (Angkas, n.d.). Their application was created to provide an affordable solution to commuters dealing with Metro Manila's traffic congestion (Co, 2023). However, a year after its launch, their operation was cut short by the LTFRB citing Republic Act 4136. Because Philippine law does not permit motorcycles to be registered as "for-hire" vehicles, Angkas drivers were registered as private vehicles while operating as a transportation service to the public (Talabong, 2017). Amid the shutdown, advocate groups urged the government to regulate MC taxi services to ensure "the operators toe the line, professionalize, and make their service legitimate and efficient" (Rey, 2018). Angkas is the first company solely dedicated to MC taxi operations and has increased awareness and changed public perception of MC Taxis. Their advocacy (or a marketing arm as seen with various posters around the Metro, in the business sense) has changed perception with 58% of Filipinos supporting its legitimization

based on the survey by a private firm WR Numero in 2024 as reported in leading newspapers (BusinessMirror,2024). In June 2019, Angkas, the LTFRB, and the Department of Transportation (DOTr) had reached an agreement. Guidelines were provided by DOTr so that Angkas could relaunch as a pilot program. The guidelines included the following: a speed limit of 60 kph, a maximum duty of 10 hours a day per driver, a maximum fare surge of 1.5 times, and an established fare matrix for Metro Manila and Cebu. Angkas was allowed to operate with 27,000 drivers (Galupo and Cabrera, 2019).

The assigned fare matrix as of 2023 is shown in Table 3. The basic fare scheme in comparison with the formally accepted modes like taxis and Grab cars does not vary that much. However, surge pricing during high-demand hours allows Grab car fares to become unreasonably high, especially when standard MC taxi fares are much lower. The MC taxi offerings are still not cheap, in the context of urban developing countries, but they provide a more efficient, albeit less comfortable mode of transport.

Table 3. Fare Scheme Comparison of TNC MC Taxi, Conventional Taxis and TNC Vehicle (Santos, 2023 and LTFRB,2022)

	MC Angkas	MC Joyride	MC Move It	Taxis	Grab Sedan
A. Flag down	Up to Php 40 ($0.69)	Up to Php 50 ($0.86)	Up to Php 50 ($0.86)	Up to Php 45 ($0.77)	Up to Php 45 ($0.77)
B.Fare/km (under 7 km)	Php 10 ($0.17)	Php 10 ($0.17)	Php 10 ($0.17)	Php 13.5 ($0.23)	Php 15 ($0.26)
C.Fare/minute of travel	Php 2 ($0.034)	Php 2 ($0.034)	Php 2 ($0.034)		
D. Surge (on B + C)	2x	2x	2x	No surge pricing	algorithm-based surge pricing

(Dollar to Peso as of July 24, 2024: PhP 58.39 = $1 (Bangko Sentral ng Pilipinas, 2024)

The approved MC Taxi pilot run was a crucial first step toward legalization. The goal was to determine the viability of the motorcycle as a mode of public transportation. Three key performance indicators were set such as road crash threshold, traffic violations, and feedback from frequent customers. By December 2020, a trio of TNVS for motorcycle taxis (Angkas, Joyride, and Move It) were given provisional authority to reoperate (after community quarantine due to the COVID-19 pandemic) as part of the extension of the initial pilot program capped to allow 51,000 riders. As of 2024, the Angkas, Joyride, and Move It TNCs continue to be the key players in application-based ride-hailing TNVS.

In terms of legislation, the Republic Act (RA) 4136, the act that established the use of motorcycles for public transportation services as illegal, is still the ruling law. In January 2020, the Philippine Competition Commission (PCC) released a press statement expressing support for amending the Land Transportation and Traffic Code to allow two-wheeled MC vehicles as a mode of public transport using the pro-competitive effects of *multi-homin*g perspective. The *multi-homing* policy allows drivers to choose which platform to offer their services, in the same way that passengers can have an option among different apps. Multi-homing also incentivizes

platforms to continuously innovate and compete to keep both drivers and passengers safe and satisfied. For this office, competition is highly recognized as an essential component in stakeholders' operations that bear an impact on the riding public. A house bill was authored to "address the legal barriers that currently prevent motorcycles from being used as common carriers, thereby fostering a more inclusive and flexible transportation framework" (Porcalla, 2024). As of May 2024, more TNCs are being accredited in other regions of the Philippines, and legislation continues to be pushed but has not passed the House of Representatives (Panti, 2024).

5. The Informal-Formal Dichotomy of MC Taxis, TNVS, and TNCs in the Philippines and its Challenges

This section looks at the road-based public transportation system informal-formal dichotomy from the supply (operator/driver and the app-based company) and from the demand side (the riding or commuting public) using the available related literature and secondary data. The major components of transportation systems involve the mode, the infrastructure, and the system operations which include the related policies and management including the development of an app for efficient driver-commuter matching. Table 4 summarizes the informal-formal dichotomy in the case of the MC taxi transportation system in the Philippines where historically, it is a valid mode of transportation as long as the motorcycle is registered, and its driver holds a valid driver's license. The reactive nature of policy development also highlights when it became legal and hence, a formal part of the public transport system. The development of an app noted how technology-driven entrepreneurs utilized this to improve MC Taxi's informal management to a more professionalized one highlighting the important livelihood/employment component of management both for efficiency and more importantly, safety. The use of an app that is legal and more transparent both for MC drivers and commuters made it more formal.

Table 4. MC Taxi System Components Using the Informal-Formal Dichotomy in the Philippines

Transportation System	**Informal ----------> Formal**		
Mode: MC Taxi and MC-propelled public transport			
History including Policies		**Motorcycle rental** in touristic sites like Siargao (registered as private)	Registered ownership for personal use and with driver's license.
		1990s policy devolved to local government units motorcycle-propelled sidecars (**tricycles**) allowed for last-mile connectivity to residential areas (tertiary roads)	
	Emergence of **MC Taxis** (habal-habal) in the 1990s	Start of **pilot operation** in 2019 of MC Taxis in Metro Manila through app-	**Motorcycles** utilized as couriers for food and **goods delivery**

		based ride-hailing like Angkas	
System of Operation			
Ownership			Personal with registration
Management	**Personal or informal groups, something using public transport stops or residential areas in** queuing system	Via various ride-hailing applications; registered in the TNC have a **management and fleet system**, road incident monitoring, insurance, and driver's training	Under LTFRB-approved MC Taxi ride-hailing company **(TNVS)**
Infrastructure	Informal public transport stop, does not have a common place for repair or fuel supplier	Use of **designated terminals for tricycles** **MC taxis on demand**	Registered phone app with tracking system as TNC, can have their own partner gasoline station, repair shops

As the gap between the formally accepted public transportation supply and demand widens, the motorcycle-for-hire industry, as an informal gap mode, is seen to continuously increase. While motorcycle taxis are seen as a solution to traffic and commuting issues in this new normal, they are also a potential threat to the use of mass transportation systems. Motorcycles as a means of mobility have become an issue for urban transport planners. Though it is a valid mode of transportation and accessibility, it is not originally intended for public transportation. Issues raised against motorcycle-based public transport are traffic congestion, worsening environment, and decreased safety.

5.1 Ongoing Challenges for Motorcycle Taxis

5.1.1 Regulation Challenges

Historically, there is no legal basis for allowing motorcycle taxis as a public transportation mode. In Davao City, a study by Guillen and Ishida (2004) in early 2000 noted that a policy response of eliminating "triciboats" led to habal-habal or motorcycle taxi emergence. The availability of credit facilities for motorcycle ownership by private dealers and motorcycle shops led former "triciboat" owners to shift to habal-habal and open-cab tricycles. This study showed that local enforcers tolerated their presence in the absence of policies providing alternative modes for passengers and due to the lack of employment opportunities for the triciboat drivers. Previously, most of the journeys made were rural-urban-rural journeys and a low number of either accidents or apprehensions have been reported. Since MC taxis reached urban areas and have been supported by companies with applications, daily passenger numbers increased with tracking of safety and efficiency and became competitive with the existing public transport like taxis and jeepneys. The continuous gap in modern public transportation, as well as traffic, has led to their increasing number. This observation confirms the need for local transport policy

to consider the effect or possible repercussions of each policy before its implementation. At the national level, the government has implemented various regulations for motorcycles, such as RA 4136 (1964) Land Transportation and Traffic Code, a law that covers driver's license and vehicle registration under the LTO, and the guidelines to Implement the Devolution of Land Transportation Franchising Regulatory Board's (LTFRB) Franchising Authority over Tricycles-for-hire to Local Government Units under the Local Government Code or RA 7160. In 2009, RA 10054, or the Motorcycle Helmet Act required riders, drivers, and passengers to wear helmets. There is the Anti-Drunk and Drugged Driving Act (RA 10586) enacted in 2013, Children's Safety on Motorcycle Act (RA 10666) in 2015 wherein children are not allowed to ride motorcycles, Anti- Distracted Driving Act (RA 10913) in 2016 and Motorcycle Crime Prevention Act (RA 11235) in 2019.

Angkas, Joyride, and Move It are part of the DOTr pilot program and are allowed to ply Metro Manila and select regions' roads under a provisional authority to operate. Related literature by Claudio Sopranzetti (2022) on Thailand noted that the Department of Land Transportation banned both apps Uber and Grab services on motorcycle taxis in 2016 claiming that the new businesses were "breaking local rules, clashing with registered transport companies, and jeopardizing security, safety, and local transport systems" because of unfair competition they created. Registered drivers using motorcycles were not covered with accident insurance for passengers and drivers whose criminal records were not checked by the government. However, in the Philippines, this issue in Thailand is being responded to as Angkas for example has been promoting the driver training and insurance that are being covered by the company.

5.1.2 Safety Challenges

Safety concerns have been a focal point in discussions surrounding motorcycle taxi operations. As seen in Figure 5, motorcycle accidents in Metro Manila have been on the rise. In Vietnam, despite the regulation of online ride-hailing motorcycle taxi services, the reported prevalence of crashes among riders remained relatively high at 30%. (Nguyen-Phuoc et al., 2019). The same study also noted that motorcycle taxi drivers suffer from various health issues due to their work demands and environment. This includes the prevalence of fatigue, lower back pain, and upper back pain, which were also associated with crash involvement. Other issues such as proper safety gear for both drivers and passengers, adherence to traffic rules, and insurance coverage have been raised. It is important to note that Philippine personal insurance policies generally exclude accidents concerning riding a two-wheeled motorcycle, scooter, bicycle, or any two-wheeled motor vehicle with or without a crash helmet and a valid driver's license.

5.1.3 Market Competition Challenges

The motorcycle taxi market in Metro Manila has seen increased competition among service providers, with companies striving to offer better services and gain a larger market share. Unfortunately, this is seen as unfair competition to taxis and public transport like modern PUVs and buses. This is one of the issues identified in Vietnam. Turner (2020) noted that Hanoi officials are implementing a stepwise ban on motorbikes from downtown streets by 2030. The decree includes a focus on developing multimodal public transportation to serve 50–55% of residents' needs in the central urban area, and 40% in satellite areas by 2030, while motorbikes

are being gradually limited in specific city areas and will be banned in inner districts by 2030. Chalermpong et al. (2022) also noted that in addition to the users, ride-hailing platforms are also favored by informal transport operators because it allows them to access passengers directly, bypassing the need to become members of drivers' associations or cooperatives, a process which entails costs. This again contradicts the current government PUV modernization goal of efficiency on the road.

6. Conclusion

The Philippines has a long history of using motorcycles as a mode of transportation for the public. Although these modes are not considered formal public transport, they have evolved in response to the growing need for transport services in diverse, geographic areas in the country, encouraging innovative design and practice. For instance, enterprising individuals added a side cab to the motorcycle, resulting in a configuration that increases the capacity of passengers served at any single time. The government's response was to develop a policy that allows their operations on tertiary roads – technically, a last-mile connectivity mode in most urban residential areas. However, in provincial areas where most of the roads are not yet fully developed, motorcycles evolved as a mobility means in the absence of a formal mode of transportation. The ease of procuring this mode has helped transport providers bring this system to urban areas. MC taxi services gained popularity due to their ability to navigate through traffic-congested areas quickly. They provided a convenient and affordable transportation option for many Filipinos.

Moreover, MC taxis have played an important role in providing income-generating opportunities for riders, especially during periods of economic uncertainty. Since starting their operation, technology-savvy entrepreneurs developed applications to complement the transport service provision. This has become an enormous business venture for a few big entrepreneurs. These market players generally earmark a significant budget for marketing, enticing commuters to use the mode but also encouraging potential riders to register their motorcycle units with them. However, this has resulted in a drop in the use of formal public transportation. As the country tries to modernize the road-based public transport system that meets the commuter's basic service quality expectations: comfortable, accessible, reliable, and environment friendly, the current issue of legitimizing the MC taxi system is also symptomatic of the bigger issue that needs to be tackled in the current urban public transport system. These applications provide an opportunity to pursue better mobility management. A significant gap that this paper has found was the lack of policies to better manage the operation of MC taxis. Enabling regulations are not yet in place in the Philippines or other ASEAN countries (see Table 1 or ITF 2023 Report).

This merits further questioning: when is a road-based public transport system- "modern"? When do we consider the mode a formal public transport vehicle? The completed review shows the potential basis to formalize the system can be underpinned by technological uptake and the livelihood or employment it generates. However, this must not be at the expense of other mobility service quality considerations such as capturing commuter perspectives, deliberating market issues, and considering the experience of other countries.

Acknowledgments

We acknowledge the funding support from the Volvo Research and Educational Foundations (VREF) for the project development on informal transportation.

Declaration of interest:

'Declarations of interest: none'

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